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ABSTRACT

This report discusses Title I programs currently operating in the St. Louis, Missouri, public schools and analyzes various budgeting options that would permit administrators to maintain educational quality in the face of reduced funding. Detailed descriptions, including data on pupil achievement, cost effectiveness, and implementation problems, are provided for Title I reading and mathematics programs, as well as for extended day preschool, kindergarten, and summer school programs. These are followed by an analysis of effects on program quality of three options: (1) service reduction in all programs; (2) selective reduction of programs; or (3) increased student/teacher ratios. Finally, the following recommendations are offered: (1) student/teacher ratio should be increased in all programs; (2) the after-school program should become the predominant Title I program in grades 1-8; (3) the least effective reading subprograms should be phased out; and (4) Title I activities should increasingly focus on pupils below the third grade level. (GC)

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PLANNING REPORT FOR FY'82 AND BEYOND

TITLE I

May, 1981

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INTRODUCTION

Title I programs have been implemented in St. Louis schools since 1965. Today, approximately 20,400 students are being served by over 400 teachers in virtually every St. Louis public school in the areas of reading, math, kindergarten or preschool. These services are provided at an annual cost of over $12,000,000. While the budget has generally increased yearly since its inception, it now appears that in the next year or two a sizable budget reduction will have to be carried out. This planning report is provided to assist administrators who must make programmatic decisions in response to these impending budget cuts.

When confronted with the unpleasant reality of reduced funding, the obvious task is to determine how and where the reductions will take place. Title I is teachers, auxiliary support personnel, and pupils. The forthcoming reductions will affect all three of these groups. The conceptual stance of this report places a value on the services provided to students. That is, even with all due consideration to the probable negative impact of funding reductions, the effort in this report will be to analyze options and offer recommendations that maintain quality educational offerings to as many Title I students as possible. This approach is not meant to be insensitive to the teachers involved in directly providing services, or to personnel who operate in a support capacity. Rather, it is meant to acknowledge as a starting point that a value has been placed on providing services to students. Other philosophical starting points might generate different options.

Viable options are also generated as a function of available information. Within this report, the information base consists mainly of previous Division of Evaluation reports. It is assumed that the readers of this report possess additional information and a more generalized perspective as to what options are indeed feasible for Title I budget reductions within the St. Louis Public School System.

Three basic options available for responding to a major budget cut will be examined.

1. Reduce services in all programs uniformly commensurate with the level of budget reduction and in proportion to present funding.
2. Reduce services in one or more programs or subprograms selectively while maintaining or expanding the level of services in others.
3. Increase the student/teacher ratio.

These options will be analyzed in greater detail after the various Title I programs and subprograms are reviewed in terms of costs, achievement, and implementation factors. A number of recommendations will be generated from the option analysis.

Context for Interpreting Achievement Data

Since achievement will be discussed in terms of Normal Curve Equivalent units a brief explanation of this unit is provided. NCE's are normalized standard scores. They have the same range (1-99) and mean (50) as percentiles. Since they, unlike percentiles are an equal-interval scale, a gain of five NCE's represents the same amount of improvement in performance regardless of their position on the achievement distribution.

Theoretically, if a student receives normal instruction his/her NCE score would remain the same from pre to posttesting. Any gain in NCE scores, therefore, can be attributed to program impact. It follows then, that the greater the NCE gain score, the greater the program impact.

No value has been set nationally as a reasonable gain; therefore, the Title I evaluation unit surveyed 28 large urban school districts in order to assist administrators in establishing local goals. Of 15 districts that responded, usable information was obtained from 9 for reading and 7 for math. As shown in Table 1, mean gain scores ranged from 4.1 to 8.5 NCE's in reading and from 5.0 to 8.9 NCE's in math. As will be shown, these values are generally well above those obtained by pupils in St. Louis.

TABLE 1

NORMAL CURVE EQUIVALENT MEAN GAIN SCORES FOR TITLE I READING AND MATH PROGRAMS IN A SAMPLE OF BIG CITY SCHOOLS, GRADES 2-8

	Grades							
Title I Program*	2	3	4	5	6	7	8	Average
Reading	6.8	8.5	5.7	4.1	4.4	4.8	7.2	5.9
Math	8.9	7.8	5.0	9.8	8.0	7.9	6.8	7.0

* Unweighted means are based on reports from a total of 9 school districts for reading and 7 for math. For any one grade level, the number of schools reporting ranged from 6 to 9.

It should be pointed out that most of the schools who responded used the California Achievement Test; thus the figures might be more comparable to 1980-81 St. Louis Public Schools test results. Nevertheless, they should serve as a gross indicator of program impact and provide some basis for comparison to the program in St. Louis. Some of the schools which did not respond might have been considerably below these mean scores. It should be noted, however, that Missouri State Title I administrators reported an approximate average gain of 7 NCE's statewide.

PROGRAM DESCRIPTIONS

READING PROGRAMS

Introduction

Reading is the largest Title I component in St. Louis. During 1980-81 approximately 217 full-time reading teachers implemented one of the reading subprograms (models) in 95 elementary and middle schools. In addition, an After School reading program was carried out at 10 sites.

Last year there were 6 reading subprograms including Remedial Reading (Hoffman Basic II), Hoffman Labs (85 and 50), Reading Resource, Verbal Skills, and the After School program. In 1980-81 there was a considerable increase in the number of subprograms including 5 new pilot programs and 3 new programs that were available for selection by schools. These 3 were: the Ancillary Reading Center, the Addison Wesley Reading Program, and the Reading Instructional Support Program.

There was considerable variation in the start-up and maintenance costs of the subprograms. The average per pupil start-up cost for nonpilot programs was $568.00 and ranged from approximately $363.00 for After School Reading to $816.00 for the Ancillary Reading Center. The average per pupil maintenance cost was $494.00 and ranged from $333.00 for After School to $747.00 for the Reading Instructional Support Program.

Achievement

Reading achievement as measured by ITBS pre/post NCE scores has been fairly low. Results for the last three years are shown in Table 2. Although scores tended to be slightly higher in 1977-78 these differences could be accounted for by the fact that a different form of the test was used that year.

TABLE 2

NORMAL CURVE EQUIVALENT GAIN SCORES
FOR RIT PUPILS IN 1977-78, 1978-79, AND 1979-80

Grade	1977-78	978-79	1979-80	Average
1	*	*	-2.5	
2	*	*	1.8	
3	-0.8	-1.5	-0.8	-1.0
4	0.0	-0.7	0.1	-0.2
5	2.6	-0.3	1.2	1.2
6	2.4	0.5	0.1	1.0
7	5.5	3.4	2.4	3.8
8	4.1	3.4	2.3	3.2

* No pre/post gain scores available

There appears to be some difference in achievement by grade level with the highest gains made in grades 7 and 8. It cannot be said with certainty, however, that these higher gains are due to factors related to the Title I program since non-Title I students also tended to show higher gains at those grade levels. In fact, last year non-Title I 8th grade students had identical gains (2.3 NCE's) as students participating in Title I Reading.

An ex post facto study of students who were in Title I Reading during 1972-73 or who were E & I but not served was carried out (see Report #7). Achievement of students was traced for four years. Results indicated that the program did not have its intended effect of significantly impacting reading achievement.

The subprograms might have differential impact on the level of achievement, but none has been outstandingly more successful than others. Table 3 provides the unweighted mean gain scores for the six programs with test data. Unfortunately, scores for two of the programs, Hoffman Lab-50 and After School Reading, are available for only one year.

TABLE 3

NORMAL CURVE EQUIVALENT GAIN SCORES
FOR TITLE I READING SUBPROGRAMS, GRADES 4-8,
1977-78, 1978-79, & 1979-80

Subprograms	1977-78	1978-79	1979-80	Average
Remedial Reading	3.0	1.3	1.4	1.9
Hoffman Lab 85	2.9	1.8	1.2	2.0
Hoffman Lab 50	*	*	0.8	0.8
Reading Resource	3.1	1.0	0.9	1.7
Verbal Skills	2.9**	-0.4	-0.3	0.7
After School	*	*	2.2	2.2

* Program was not implemented
** Grades 5-8

Although results for programs in 1977-78 were almost identical, the Verbal Skills program was consistently lower the following two years. It should also be noted that last year Hoffman Lab-85 had slightly higher gains than Hoffman Lab-50 and that the highest gains were made by pupils in the After School program.

Cost Effectiveness

Although the difference in NCE gains between subprograms were not very large, when they are considered in light of costs it becomes clear that some are considerably more cost effective than others. Table 4 below, illustrates this by providing the cost per one NCE gain (based on maintenance cost). Several points become apparent. First, After School Reading is considerably more cost effective than any of the other programs, second, Verbal Skills is the least cost effective, and third, Hoffman Lab-85 is considerably more cost effective than Hoffman Lab-50. It also becomes clear that there is not a positive correlation between cost of the program and achievement.

TABLE 4

RELATIVE COST EFFECTIVENESS OF
THE MAJOR TITLE I READING SUBPROGRAMS
IN ELEMENTARY AND MIDDLE SCHOOLS

Subprogram	Initial Cost/Pupil*	Maintenance Cost/Pupil*	Mean NCE Gain**	Maintenance Cost/NCE Gain
Remedial Reading	$ 520	$ 481	1.9	$ 253
Hoffman Lab-85	555	605	2.0	203
Hoffman Lab-55	710	503	0.8***	627
Reading Resource	384	372	1.7	219
Verbal Skills	580	458	0.7	654
After School	363	333	2.2***	151

* Based on estimates for 1980-81

** Based on unweighted means over a 3-year period except where noted.

*** Mean gain for 79/80 only

Implementation

There are a number of problems related to implementation of reading programs that could impact decision making in the face of budget cuts. These include:

1. Pupils miss classroom instruction in some area due to participation in Title I programs.
2. Title I instruction might supplant rather than supplement reading instruction in the regular classroom.
3. The regular classroom program is disrupted due to excessive pullouts for Title I or other purposes.
4. There is limited space available for Title I classes in many schools.
5. The holding of Title I classes in the regular classroom often proves to be disruptive.

6. Some support systems are not designed for remediation.

One of the most basic implementation problems is the fact that participants in Title I classes miss some aspect of their regular classroom instruction. Although careful planning by the regular teacher can minimize the negative impact of the pupil's absence the fact remains that the pupil has lost some amount of his/her regular class time.

Closely related to the above is the problem of supplementing rather than supplanting. That is, there is a potential for regular classroom teachers to provide less instruction in reading to those pupils who are participating in a Title I reading program. Although a study carried out last year indicates that this is not a serious problem, there still appears to be concern among some Title I teachers that their pupils are not receiving the required amount of instruction in the regular classroom (Report #12).

Regular classroom teachers often complain that there are too many pullouts from their classes. While not all pullouts are related to Title I programs they certainly contribute to the problem. Again, while careful planning and cooperation can minimize the negative impact of pullouts they cannot help but be a disruptive force in the regular classroom.

There is a problem in some schools of inadequate space available for Title I instruction. This sometimes results in several teachers sharing one classroom or in Title I classes being held in less than desirable locations.

Two reading subprograms, Reading Resource and Primary I, are designed to be implemented in the regular classroom. This, however, often proves to be disruptive to both the regular classroom and Title I teachers. In one case, for example, a

Resource Reading teacher reported that the regular classroom teacher threw up her hands in frustration and left the room because the whole class had turned their attention to the Title I session. In addition, some Resource Reading/ Primary I teachers reported or were observed holding their class in a cloak room or some other inadequate area.

Another problem is the appropriateness of the support system for remediation. Many remedial reading teachers, for example, have expressed their concern about the fact that the Hoffman Basic II material is not designed for remedial classes. Although teachers are encouraged to supplement the Basic II material, the problems of appropriate scope and sequence have not been adequately addressed.

MATHEMATICS PROGRAMS

Introduction

Mathematics is the second largest Title I component in St. Louis. During 1980-81 approximately 90 full-time math teachers implemented one of the math subprograms at 79 elementary, middle, and high schools. In addition, 33 teachers taught math at the 10 After School sites.

The major subprogram in elementary and middle schools was Remedial Math (IMS). Only a few schools (4) used the Remedial Math Lab Model. Both subprograms had options for the use of an aide. Ten schools opted to have all or part of their Title I math program during After School sessions.

The math program has been expanded at the high school level from 2 sites in 1979-80 to a total of 11 sites in 1980-81, and consists of 3 subprograms: Intuitive Math Lab, Essential Math Skills, and High School Math Tutoring.

As in the reading programs the start-up and maintenance costs varied by program although the variation was not as great in math. In elementary and middle schools the average per pupil start-up cost was approximately $500.00, and ranged from $363.00 for After School to $656.00 for Remedial Math Lab-50 (no aide). The average maintenance cost was approximately $406.00 and ranged from $333.00 for After School to $458.00 for Remedial Math-50.

Achievement

Overall, Title I Math appears to have had a slightly greater impact on achievement than Reading. As shown in Table 5, average gains for a three-year period varied from 1.0 NCE in 4th grade to 5.4 in 8th grade.

TABLE 5

NORMAL CURVE EQUIVALENT GAIN SCORES
FOR MIT PUPILS IN 1977-78, 1978-79, AND 1979-80

Grade	1977-78	1978-79	1979-80	Average
1	*	*	5.2	5.2
2	*	*	1.2	1.2
3	1.1	4.0	2.8	2.6
4	-0.8	2.4	1.5	1.0
5	3.7	5.5	2.3	3.8
6	3.7	4.1	2.8	3.5
7	5.9	5.2	4.0	5.0
8	6.6	4.9	4.7	5.4

* No pre/post gain scores available

In an ex post facto study carried out for the years 1974 through 1976, it was found that students who were in MIT schools scored significantly higher on the ITBS math subtests at the end of 5th and 6th grades than did students in Title I schools not offering MIT services. It was also found, however, that there was no evidence within the MIT schools to indicate that differences in achievement could be attributed to the length or sequence of treatment, including results for those students who were not served at all (see Report #6).

Results for the 3 math subprograms are presented in Table 6. Although After School had slightly higher gains it should be pointed out that, as in reading, this program was in operation only one year and it is too early to tell if the difference will be consistent over time.

TABLE 6

NORMAL CURVE EQUIVALENT GAIN SCORES
FOR TITLE I MATH SUBPROGRAMS, GRADES 3-8,
1977-78, 1978-79, & 1979-80

Subprograms	1977-78	1978-79	1979-80	Average
IMS	3.5*	4.4*	3.0*	3.6
Hoffman Lab	**	3.0	3.8	3.4
After School	***	***	4.7	4.7

* Weighted means were used because of extremely low N's at some grade levels for Hoffman Lab and After School.

** Score was not available.

*** Program was not implemented.

Although the high school math program started in 1979-80 the achievement data is very sparse largely because of high attrition and low attendance rates at the two sites where it was implemented (see Report #2). For those students who remained in the program and who were both pre and posttested, the results were generally positive. Twenty-three 10th grade students at Northwest High School, for example, had mean gains of 4.3 NCE's.

Cost Effectiveness

The process used for calculating cost effectiveness can also be applied to the Math subprograms. Where this is done, as shown in Table 7, it once again appears that After School is the most cost effective. While it must be pointed out again that After School data is available for only one year, even with gains equal to the other programs it would be more cost effective because of its lower initial and maintenance costs.

TABLE 7

RELATIVE COST EFFECTIVENESS OF
THE TITLE I MATH PROGRAMS
IN ELEMENTARY AND MIDDLE SCHOOLS

Subprogram	Initial Cost/Pupil	Maintenance Cost/Pupil	Mean NCE Gain	Maintenance Cost/NCE Gain
IMS	$ 486	$ 455	3.6*	$ 126
Hoffman Lab-70	589	449	3.4**	132
After School	363	333	4.7***	71

* Weighted mean for 3 years

** Weighted mean for 2 years

*** Weighted mean for 1 year

Implementation

Except for the fact that none of the math subprograms call for the Title I teacher to hold sessions in the regular classroom, the problem areas related to implementation are the same as those in the reading program.

In addition, motivating students to participate appears to be a problem for the high school math programs. This problem will probably be more serious next year if students are not given academic credit.

KINDERGARTEN EXTENDED DAY PROGRAM

The Kindergarten Extended Day (KED) Program provides an additional half-day of instruction to eligible and identified kindergarten pupils who have learning difficulties in the basic skills. The program was begun in January of 1974, with 66 classes operating in 25 schools and serving over 1,400 students. During the 1980-81 school year, KED provided 78 classes of instruction at 48 schools, and served approximately 1,170 students.

The program's overall goal is to prepare students for successful entry into the primary grades. It fosters pupil acquisition of skills, attitudes, and knowledge in the following general areas: language arts, vocabulary, concept development, number concepts, and personal and social growth. Since its inception, the program has utilized three instructional systems: The Language and Thinking Program, Developing Understanding of Self and Others, and Readiness in Math-Behavioral Research Laboratories.

According to the Title I Selection Handbook, the start-up cost for the KED program in fiscal year 1981 was $1,044 per student. The maintenance cost per student was $1,025.

Achievement

Every comparison of KED and non-KED control groups since 1974 has substantiated the positive impact of the KED program (Reports #22-27). Regardless of the standardized test employed in these pre-posttest comparisons, KED pupils' achievement gains have consistently surpassed those of comparison groups. Table 8, extracted from the Kindergarten Extended Day Achievement Report 1980, is illustrative of this type of finding.

TABLE 8

COMPARISON OF NCE SCORES BETWEEN KED AND NON-KED PUPILS ON THE PRIMARY IOWA TESTS OF BASIC SKILLS

Subtest	Group	N	Mean NCE	Difference
Vocabulary	KED	191	31.2	
	Non-KED	172	28.2	3.0
Language	KED	190	32.1	
	Non-KED	171	24.1	8.0
Word Analysis	KED	188	43.2	
	Non-KED	168	36.7	6.5
Listening	KED	191	34.7	
	Non-KED	169	29.4	5.3
Math	KED	190	39.4	
	Non-KED	170	31.5	7.9

Participation in KED also appears to reduce the number of children requiring Title I services in first grade. As shown in Table 9, 19% more KED pupils than non-KED pupils scored above the maximum selection score for Title I services in both reading and math.

TABLE 9

COMPARISON OF THE PERCENTAGE OF KED AND CONTROL PUPILS WHO SCORED ABOVE THE FORTIETH PERCENTILE ON THE PRIMARY ITBS

	N	Reading	N	Math
KED	190	28%	190	44%
Non-KED	171	9%	171	25%

Cost

There is a demographic bulge in the school system at the first grade level in part due to the high percentage of first graders that are retained. Given the concomitant monetary and personal costs engendered by these retentions, it may be

hypothesized that the KED program provides secondary and tertiary benefits through the probable reduction of retentions at the first grade level.

Another more quantifiable cost effectiveness figure is given below based on the 1981 KED program maintenance cost of $1,025 per pupil divided by the mean 1980 NCE difference of KED and non-KED pupils on the ITBS.

TABLE 10

COST EFFECTIVENESS OF THE KINDERGARTEN EXTENDED DAY PROGRAM

Program	Maintenance Cost/Pupil	Mean NCE Difference*	Maintenance Cost/NCE Difference*
KED	$ 1,025	6.1	$ 169

* This cost effectiveness calculation differs from those used in other parts of this report because there are no gain scores available for the calculation, hence the use of the "difference" scores.

Implementation

The KED program seems to have experienced little of the traditional implementation trauma typically associated with programs of a similar nature. For a number of years, KED teachers have been extremely laudatory when describing their perceived effects of the program on the subsequent achievement of pupils (Reports #23, 25). Most teachers believe that the program does help their students by offering them a better preparation or readiness for first grade. These types of beliefs, or teacher expectations, have been shown to be positively associated with learning and/or achievement, and are probably a contributory factory in the consistent success of the KED program.

Discussion

The KED program has produced positive end of the year (or beginning of first grade) results for the past seven years. In spite of its comparatively high maintenance

cost per student, it is relatively cost effective when its positive results are taken into account. Because a systematic comparative longitudinal study has not been completed to date, it is difficult to attribute the secondary and tertiary benefits of KED. It seems to have unmeasured potential.

PRESCHOOL ACADEMY PROGRAM

The Preschool Academy Program provides services for two groups: (1) preschool pupils who evidence measurable developmental delays or deficits, and (2) parents or caretakers of those children. The program was piloted at Euclid School in the Spring of 1976 and implemented as a Title I component at three schools during the Fall of the year. During the 1980-81 school year, the Preschool Program provided 120 pupils with instruction at 3 different sites.

The pupils who participate in the program are afforded opportunities for the structured development and/or remediation of cognitive, psychomotor, and affective skills. The parents or caretakers of the preschool pupils are provided with information relative to the child's development and given instructions or suggestions as to how the child's overall development can be enhanced.

As an adjunct to the educational offerings of the program, pupils with possible learning disabilities and physical impairments are identified, and appropriate referrals are made. The use of support personnel and services makes this identification and referral process possible.

According to the Title I Budget Summary for 1980-81, $140,682 was allotted to serve approximately 120 pupils. Thus, a gross cost per pupil of $1,174 can be derived.

Achievement

To date, evaluations of the Preschool Program have tended to focus on enrollment, attrition, home visits, classroom observation, parental participation, results of screening for physical impairments, interviews of staff, and reviews of records and documentation (Reports #28-30). Results of the Denver Developmental

Screening Test, which is used as screening instrument for entry to the program and was extracted directly from the Evaluation of the Preschool Academies Report 1980, is presented in Table 11.

TABLE 11

PERCENT OF PUPILS AT PRESCHOOL SITES WITH REMEDIAL NEEDS IN AREAS IDENTIFIED BY THE DENVER DEVELOPMENTAL SCREENING TEST

		Areas of Need			
Site	Class	Personal/ Social	Fine Motor	Language	Gross Motor
Carver	A.M.	35%	78%	83%	52%
	P.M.	58	83	79	71
Euclid	A.M.	20	85	95	80
	P.M.	43	83	74	30
Mullanphy	A.M.	25	73	88	38
	P.M.	26	57	89	49

It can be noted that these preschool pupils were most in need of remedial assistance in the areas of Language and Fine Motor. Similar patterns of skill deficits have been identified in other evaluations (Report #29).

The most useful local document in assessing the short-range impact of the Preschool Program is "A Comprehensive Examination of the Title I Preschool Academy 1978" (Report #29). It provides over 20 tables and figures which allow some indepth analysis of the efficacy of the Preschool Program. The following are condensed versions of the findings presented therein:

1. Pupils achieved a significant developmental gain on the Inventory of Skills Development, averaging 8.3 months during the five-month period from pre to post-testing. For pupils in their second year of the program the average gain was 9.5 months, for those in their first year the average gain was 7.8 months.
2. The developmental growth of Preschool pupils seemed

independent of their initial degree of developmental deprivation.

3. The Preschool Program was more effective in the cognitive domain than in the psychomotor domain.

Cost

No cost per NCE gain can be calculated for the Preschool Program.

Implementation

During the previous school year, some instability of enrollment was noted at one site while the other two sites were deemed relatively stable. It was also noted that the number of home visits made by preschool staff varied greatly by site. Previous evaluations have documented parents' positive perception and use of instructional materials not only with the preschool pupils but with other pupils in the home as well.

Discussion

The Preschool Program seems to have face validity. That is, based on available local documentation, the program seems to be effective in enhancing the cognitive, psychomotor, and affective development of its participants. It is impossible to fully ascribe the program's short and long-term impact without a local systematic comparative longitudinal study being undertaken.

A recent study conducted by the Education Research Foundation, Young Children Grow Up: The Effects of the Perry Preschool Program on Youths Through Age 15, provides some insight into the possible long-range impact of preschool (Report #41). Some of the study's findings are:

1. Through fourth grade fewer than half as many children from the Preschool Program have been retained in grade or placed in costly special education classes than children from control groups (17% vs. 38%).
2. The conservative projected rate of differential placement in special education and the lower rate of grade retention would result in a savings of $3,353 per student (based on 1973 dollars) for the school district over the students enrollment period.
3. The preschool participants evidenced: improved cognitive ability at school entry, increased motivation during elementary school, they placed a higher value on schooling, higher achievement through elementary & middle school, and decreased delinquent behavior when compared to the control group.

It is difficult to determine which, if any, of the Perry Preschool Projects' findings can be extrapolated to the St. Louis Preschool Program. The Perry Project participants attended a group preschool program 12½ hours a week and were visited at home with their mothers 1½ hours a week. The participants were directly comparable to the Title I preschool participants in St. Louis. Again, based mainly on face validity, the Preschool Program, like KED, potentially could provide incalculable benefits to the participants and the school system.

Further evidence for the effectiveness of preschool programs comes from a longitudinal study of 14 infant and preschool experiments (Report #39).

SUMMER SCHOOL PROGRAM

The Title I Summer School Program has been intermittently offered since at least 1969. The program is designed to sustain and expand achievement gains made by Title I pupils during the regular school year. Throughout the program's history it has also served nonpublic pupils. The program's most recent implementation was in 1980, when it operated at 48 sites and served 5,367 pupils.

Typically, part of the rationale or justification for the Summer School Program has revolved around the perceived need of some pupils to require additional instruction to master certain basic academic skills. A secondary rationale alluded to the importance of appropriate attitudes for learning in Title I pupils, and delineated non-cognitive experiences to foster those desired attitudes.

The total budget for the most recent Summer School Program offering was $962,929. The program served 5,367 pupils, thus the approximate cost per pupil was $179.

Achievement

Because of the nature of its structure and the generalized scope or purpose of the Summer School Program it may be unreasonable to expect it to produce achievement growth on standardized tests. The short-term nature and limited focus of the program does not readily lend itself to traditional evaluative designs. Nonetheless, in lieu of recent alternative forms of data, some evidence of efficacy must be obtained and presented.

According to a recent Division of Evaluation Report (#31), there is little evidence to support the benefits of Summer School for raising the achievement of Title I students. If Summer School is effective at all, it is probably only so for the primary grades. Table 12 was extracted from that report, and shows the relative achievement score equivalence of the Summer School pupils and the matched control group.

TABLE 12

ACHIEVEMENT TEST NCE AVERAGES FOR
SUMMER SCHOOL AND COMPARISON STUDENTS

Grade during 1979-80 schl. yr.	Group	Reading				Math			
		Fall 79	Sp 80	Fall 80	n	Fall 79	Sp 80	Fall 80	n
1	Sum	45.3	42.9	38.1	47	35.5	42.7	34.6	38
	Comp	44.9	41.3	35.7	58	35.9	38.5	31.6	55
2	Sum	38.8	40.4	35.9*	60	36.3	34.3	34.8	59
	Comp	40.6	42.4	32.2	61	37.9	38.1	34.0	63
3	Sum	30.0	30.8	34.1	69	34.8	37.2	35.4	68
	Comp	33.2	34.8	37.9	73	37.4	40.9	37.9	70
4	Sum	30.6	32.5	36.0	76	34.2	40.0	40.5	71
	Comp	31.5	31.9	37.9	76	38.6	41.2	40.5	74
5	Sum	28.1	31.8	36.0	70	32.5	37.6	39.7	71
	Comp	32.9	31.2	37.6	81	36.2	37.4	38.9	80
6	Sum	30.1	30.6	35.6	51	31.8	33.0	36.2	47
	Comp	30.5	30.6	35.3	53	31.9	34.8	36.9	52
7	Sum	30.2	30.1	38.1	45	31.7	35.1	38.4	44
	Comp	31.4	30.5	39.1	55	31.9	34.9	41.2	53
8	Sum	26.5	27.1	36.1	16	34.6	36.9	34.2	16
	Comp	29.3	29.6	36.1	18	37.4	38.3	37.4	19

NOTE: Data reported in this table are for students in a sample of 12 Summer School sites, and include data only for students for whom matches were found and who attended Summer School for a minimum of 11 days.

* This difference is statistically significant.

An earlier evaluation study (Report #34) used teacher rating scales as a criteria for assessment. According to that effort, 83% of Summer School pupils showed growth.

Cost

Because there were no NCE gains per se during the most recent Summer School implementation, the $179/pupil cost will be used.

Implementation

Pupils, teachers, principals, and coordinators have usually reported a perception that the program was successful (Reports #31, 34). Over 88% of the pupils reported that they attended school regularly. Many described the atmosphere as enjoyable.

Summer School classes tended to be well-organized, task-oriented, and because of the small class size, able to meet individual needs. Table 13 extracted from a recent report, gives an overview of the classroom climate.

TABLE 13

EVALUATOR RATINGS OF CLASSROOM CLIMATE SHOWN BY PERCENT OF CLASSES AT EACH RATING ON A 5-POINT SCALE

Classroom Climate Items	Evaluator Ratings 5	4	3	2	1
	High		Average		Low
1. Sequence of instruction orderly and well organized.	54%	36%	5%	2%	3%
2. Materials organized and accessible.	51%	35%	9%	3%	2%
3. Assignments/instruction provided by the teacher clear.	61%	30%	6%	0%	3%
4. Evidence of awareness of individual pupil needs.	63%	21%	11%	3%	2%
5. Behavior management suitable and effective.	61%	31%	3%	3%	2%
6. Courteous atmosphere between pupil and teacher.	73%	22%	2%	3%	0%
7. Pupils attend to tasks in an orderly and consistent manner.	63%	27%	6%	2%	2%

Discussion

As a Title I offering, the Summer School Program of necessity must be directed at improving pupil achievement in basic skill areas. Available data does not validate its effectiveness as a tool to sustain or enhance achievement gains of the regular school year. Of course, the benefits of Summer School may not be quantifiable with achievement scores.

The primary effectiveness of Summer School may reside in the area of nonacademic objectives. Improvement of attitudes toward learning, or exposure and enrichment through field trips, are just two of the expected and reported affective outcomes of Summer School. Perhaps through the use of attitudinal scales, naturalistic observation, or other measures, a more comprehensive understanding of the effectiveness of Summer School could be achieved.

The discussion of Summer School within this report can be considered somewhat moot given the recent decision to discontinue it in a generalized form. However, as an option with restricted or focused intentions, particularly at the early grade levels, it could prove to have a significant impact.

OPTION ANALYSIS

Three basic options for responding to budget cuts were pointed out in the introduction.

1. *Reduce services in all programs uniformly commensurate with the level of budget reduction and in proportion to present funding.*
2. *Reduce services in one or more programs or subprograms selectively while maintaining or expanding the level of services in others.*
3. *Increase the student/teacher ratio.*

Reduce Services in all Programs

In order to carry out a uniform reduction of services in all programs, it would seem necessary to establish some appropriate procedure. One procedure would be to restrict services to pupils with the greatest need as indicated by the selection test. For example, although the cut off score for grades 1-6 is the 40th percentile, the actual placement of pupils could be limited to those scoring at or below the 30th percentile. This procedure could reduce the number of programs needed at any one site, and allow a reduction in the number of teachers at that site. One problem with this procedure is that it disregards the relative cost and/or effectiveness of the subprograms. Nor does it consider possible grade or program priorities.

Selective Reduction of Programs

The selective reduction of programs would allow decision making on the basis of each program/subprogram's merits in terms of cost, achievement and/or implementation factors. Hoffman Lab-85 which serves 85 pupils with the assistance of an aide,

for example, appears to produce greater gains than Hoffman Lab-50 at a maintenance cost that is approximately 80% of the Lab-50 program. (It should be noted that the option of an aide is being expanded to other subprograms next year.)

Verbal Skills has a fairly high maintenance cost, but has had fairly minimal impact on achievement. It might be reasonable to limit this program to those few sites that appear to be consistently more effective.

The After School Program appears to produce achievement results equal to or greater than that achieved by other reading and math programs at a maintenance cost that is, on the average, approximately 25% less than other programs. In addition, some of the most serious implementation problems characteristic of day programs, discussed earlier, are eliminated. These facts would seem to call for an expansion of the After School program. Such a step has been taken in the Dade County School System where the entire Title I program at the elementary level is held after normal school hours for a period of approximately two hours. The decision to make it the only option at the elementary level was made after it was found to be more effective than their day program.

There are, of course, potential problems that could arise. One of the authors interviewed Dade County administrators and visited an After School site in Miami this Spring. Although all personnel interviewed favored the After School program, they did mention some disadvantages, such as: the long day created for teachers and administrators, logistics involved with busing, and recruitment of a sufficient number of teachers. Nevertheless, in light of the enthusiasm for the program expressed by Dade County personnel and in light of its relative success in St. Louis, expansion of the program would seem to be a viable option.

The Title I Math program has recently been expanded into the high schools and next year high schools will have an option of choosing a Writing/Language Arts program. Implementation problems such as maintaining student interest might result in a fairly costly program in relation to its productivity. If such is the case, a decision to reduce or eliminate high school programs might be appropriate.

Increase Student/Teacher Ratio

Increasing the student/teacher ratio might be a viable option especially for some programs. Recent research on teacher effectiveness, for example, does not support the notion that individualization of instruction is necessarily more effective than whole class or small group instruction. (See for example Reports #37, 40 & 41.) Yet the need for individualizing is the dominant argument for extremely small class sizes espoused by some Title I teachers. More careful ability grouping might be one means of increasing class size without negatively impacting achievement. Presently, the average class size for remedial reading classes is 7. If this average were increased to 10 for a total pupil load of 60 per teacher, the per pupil maintenance cost would be reduced to approximately $400, a saving of 17 percent.

There appears to be a growing interest locally and nationally in the expansion of preschool and kindergarten programs. Achievement studies of KED indicate that this program has had a positive impact on achievement. Although it has a high per-pupil cost (more than $1,000), it might, in the long run, be more cost effective than some other Title I program. There also is growing evidence that quality preschool experiences can have a significant lasting impact. It too, however, is a very costly program.

One reason these programs are so costly is the low pupil/teacher ratio, 15 children per class for one teacher and one aide. This is considerably below the pupil/

teacher ratio in regular kindergartens where the average class size is 30 without an aide. At the same time there seems to be little empirical evidence that the program couldn't be equally as effective if the class size were increased. An increase of 5 children per KED class would reduce per pupil cost from $1,025 to approximately $765, a savings of 25 percent.

While State guidelines presently prohibit class size above 15 for kindergarten classes, there is a possibility that this class size limitation could be changed in the future.

Summary

Within certain philosophical and informational constraints this report has attempted to present a paradigm to assist administrators in making difficult decisions. As noted in the introduction, the methods used in this document to summarize data and analyze options were done with the hope that these procedures could eventually translate to minimal interruption of services for students. It's recognized that when funding levels are reduced, disruption of some sort will occur. However, it is hoped that the process of reduction will serve as a catalyst to redefine and eventually enhance the quality of Title I services provided to students.

RECOMMENDATIONS

In light of the foregoing analysis, the following recommendations are proffered:

I. The student teacher ratio should be increased in all Title I program offerings.

Increasing the student/teacher ratio would allow a reduction in the number of Title I teachers, the major single cost of all the Title I programs. Although state guidelines limit the class size, most reading and math classes are well below this maximum. Although KED classes presently operate at the maximum level, communication with state personnel indicated that this figure could be raised as a result of budget cuts. Lobbying efforts by St. Louis Public Schools might also facilitate change in these class size limitations.

Most of the teachers who would no longer be required for Title I services could be reassigned to the regular classrooms vacated as a result of the normal attrition process (the attrition rate of teachers in St. Louis Public Schools is approximately 8%).

II. The After School program should be expanded to become the predominant Title I subprogram offering at grades 1-8 during the next 3 years.

The After School program appears to promise the highest achievement gains at the lowest per pupil cost. In addition, many of the basic implementation problems

associated with day programs are not encountered. Since this program can draw from regular classroom teachers, it will also reduce the number of full-time Title I teachers. Expanding the program over a period of several years should allow for the reassignment of these teachers.

III. The least cost effective reading subprograms should be phased out beginning with Verbal Skills in FY'82.

Subprograms, especially in reading, that are least cost effective, should be replaced. In addition to expanding the After School program, which appears to be most cost effective, those subprograms that have relatively high per pupil cost and fail to produce gains commensurate with these cost, should be eliminated.

IV. The Title I program offerings should increasingly focus on pupils below the 3rd grade level.

A number of recent investigations have reported that deliberate cognitive curricula at the preschool level can have a significant long-term effect on school performance. The potential benefits for both the pupil and the school system seem greatest at these early ages. With Title I offerings in KED and Preschool properly augmented and orchestrated with the services Provided in grades 1-3, the rosters of eligible and identified pupils at higher grade levels should be significantly reduced.

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